



# **White Oak Road Widening Environmental Assessment**

**February 2010**



## Executive Summary

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### **White Oak Road Widening Great Smoky Mountains National Park**

This Environmental Assessment (EA) addresses the proposal by the North Carolina Department of Transportation to widen White Oak Road, which crosses National Park Service (NPS) property near Cataloochee Valley in Haywood County, NC. The project site is located on a right-of-way extending from Hoglen Gap at the Cataloochee entrance to Great Smoky Mountains National Park (GRSM or Park) east toward Interstate 40, approximately 18 miles from Waynesville, NC and near I-40 Exit 15 (Fines Creek).

In July, 2008, the North Carolina Department of Transportation advised GRSM of their interest in making improvements to State Road 1338 (White Oak Road), which includes the portion crossing a right-of-way (ROW) within the Park boundary known as the “Cataloochee Access Road” tract. This property, totaling 509.45 acres, was acquired by donation from the state of North Carolina in 1969 for the purpose of building an entrance to Cataloochee Valley from Interstate 40. While this concept was subsequently abandoned in the Park’s 1982 General Management Plan, the tract remains by law part of GRSM and subject to the same laws, policies and regulations as other areas of the Park. NC DOT approached the Park with the request based on safety concerns associated with access to the area by emergency and/or oversized vehicles. NPS has legal authority to issue a ROW permit to NC DOT to accommodate their request to widen White Oak Road contingent on appropriate environmental review and a determination that no other reasonable alternative exists. The purpose of this EA is to determine whether there is any feasible and prudent alternative to the proposed action, and whether all possible planning has taken place to minimize and mitigate harm to the Park. The proposed improvements are summarized below under Alternative B (Build Alternative).

Two alternatives are analyzed in this document. Alternative A is the No Action Alternative and Alternative B is the Build Alternative.

Alternative A, No Action Alternative - Under Alternative A, there would be no changes made to the existing road corridor of White Oak Rd. The No Action alternative is presented as a requirement of the National Environmental Policy Act, (NEPA) and is the baseline condition with which proposed activities are compared.

Alternative B Build Alternative (*Environmentally Preferred and Preferred Alternative*) - Under the Build Alternative, NC DOT will be issued a right-of-way permit to widen and pave the section of White Oak Road that crosses NPS property.

## **Public Comment**

If you wish to comment on the EA, you may mail comments to the name and address below. This EA will be on public review for 30 days. The EA has been posted and is available for public review on the NPS' Planning web site at <http://parkplanning.nps.gov/grsm>. Click on the "*White Oak Road EA*" link. The public can provide comments directly on the project site by clicking on "Comment on document" from the menu on the left. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

COMMENTS MUST BE RECEIVED BY March 19, 2010. Written comments may be received later if postmarked by March 19, 2010. Please address written comments to:

Superintendent  
Great Smoky Mountains National Park  
107 Park Headquarters Road  
Gatlinburg, Tennessee 37738

Comments may also be submitted on the NPS' Planning web site at <http://parkplanning.nps.gov/grsm> as described above.

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## **1.0 INTRODUCTION**

Great Smoky Mountains National Park (GRSM or Park) proposes to issue a right-of-way permit to North Carolina Department of Transportation (NC DOT) to allow widening of White Oak Road in Haywood County, NC, where the road crosses NPS property near Cataloochee Valley. The proposed road project will improve safety for larger vehicles accessing the area, including school buses and emergency vehicles. Local development has increased use of this small rural road, which carried an estimated 140 vehicles per day according to a 2000 traffic count.

### **1.1 Purpose and Need**

#### **1.1.1 Purpose**

The purpose of the project is to improve traffic safety and emergency vehicle access by widening and paving White Oak Road, including the portion which crosses NPS property. The majority of White Oak Road outside the Park boundary has already been widened to accommodate these needs; however, the 0.9 mile segment of the road within the Park boundary has not been improved subject to this compliance process.

#### **1.1.2 The Need**

White Oak Road originally served a very small rural area, but residential development has increased population and corresponding traffic. The most recent traffic count was in 2000, when the estimated average annual daily traffic was estimated at 140 vehicles per day. The NC DOT would like to accommodate the larger volume of traffic, including school buses and emergency vehicles, by widening and paving the road.

### **1.2 Background**

The NC DOT has requested permission to widen and pave White Oak Road (State Rd. 1338) in Haywood County, North Carolina. A portion of the proposed project, approximately 0.9 miles long, crosses lands of GRSM. Widening is planned for both sides of the road. The existing roadway surface from edge of shoulder to edge of shoulder is 18 ft wide, while the proposed new dimension is 28 ft. The proposed new maintained ROW is 50 ft. wide, an increase of 0.705 acres from the existing ROW. A construction easement totaling 0.242 acres was also requested. The proposed project uses only state funds. The Park land in question (514.23 acres) is known as the "Cataloochee Access Road" tract and was donated to the NPS by the state of North Carolina in 1969 pursuant to the construction of Interstate 40. The original intent of the donation was to provide lands for an access road from I-40 into the Park's Cataloochee Valley section. The Park's General Management Plan of 1982 documented the decision not to build the access road. However, the deed did not include a reverter clause and so the NPS has owned and managed the acreage as part of GRSM since the transfer. At the eastern end of the finger-like boundary projection are at least two narrow gravel roads crossing Park lands. Both roads, to include White Oak Road, are maintained by Haywood County. The 1969 deed gives the state of NC the right to *"maintain such sections of public roads on Park Service lands in the same manner, to the degree of maintenance as has been formerly applied to those roads..."* The State has provided sound

reasons to proceed with the project, including improved safety for school buses, emergency vehicles and all road users. Legal review of the NPS authorities indicate that 40 USC 1304(b) allows for such a proposal and that NPS interests would be best protected by the issuance of a right-of-way permit rather than a fee simple transfer of property, depending on the outcome of NEPA and Section 106 compliance and NPS approval of project design.

Proposed plans consist of the following:

The section of White Oak Road crossing NPS property is approximately 1,540 feet or about 0.3 miles long. Widening is proposed on both sides of the road, including both cut and fill slopes. The existing maintained ROW on GRSM property is 35,566 square feet or 0.816 acres, while the proposed new maintained ROW would add an additional 30,690 square feet or 0.705 acres. A temporary construction easement totaling 10,537 square feet or 0.242 acres has also been requested, bringing the total new disturbed area to 0.947 acres. The road surface would also be paved.

The proposed improvements summarized above are described in further detail in Section 3.2 below as Alternative B, Build Alternative.

### **1.3 RELATIONSHIP TO OTHER PLANNING EFFORTS**

The Park's 1982 General Management Plan (GMP) establishes long-range strategies for resource management, visitor use, and provides an integrated plan for the management of the Park. This plan creates a framework for all future programs, facilities, and management actions. The proposed action supports the General Management Plan's determination that the Cataloochee Access Road remain as NPS property, while its original purpose (to construct a connector highway from Cataloochee to I-40) would not be implemented. A 1999 Cataloochee Development Concept Plan reiterated this decision.

### **1.4 COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS**

#### **National Environmental Policy Act of 1969**

The National Environmental Policy Act (NEPA) requires consideration of the environmental effects of proposed federal actions. NEPA also ensures that environmental information is available to public officials and members of the public before decisions are made and before actions are taken. This EA provides a description of a No Action alternative and a Build Alternative, and summarizes potential environmental consequences of the alternatives. A public review period will be held.

#### **Endangered Species Act of 1973**

Section 7 of the Endangered Species Act directs all federal agencies to further the purposes of the act. Federal agencies are required to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitat. The NPS did not initiate consultation with the U.S. Fish and Wildlife Service regarding the proposed project, as no listed species are potentially impacted by this project.

**Clean Water Act**

The proposed actions will have no effects on water quality. No construction activities or activities that would result in release of sediment or contaminants to the environment are planned under either alternative proposed and thus would not need to comply with the requirements of sections 401 and 404 of the Clean Water Act and other applicable federal, state and local regulations.

**Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands)**

Executive Orders 11988 and 11990 direct federal agencies to enhance floodplain and wetlands value, to avoid development in flood plains and wetlands whenever possible, and to minimize adverse impacts if development cannot be avoided. The preferred alternative, construction of improved concession facilities, does not fall within the regulatory Floodplain (100 year).

**Section 106 of the National Historic Preservation Act of 1966, as Amended**

Section 106 of the National Historic Preservation Act requires that an assessment be conducted of any project, activity, or program that could change the character or use of properties listed in or eligible for listing in the National Register of Historic Places. The NPS has coordinated with the State Historic Preservation Office in North Carolina to ensure concurrence that there are no potential impacts on the cultural landscape from the proposed project.

**Archeological Resources Protection Act of 1979**

The Archeological Resources Protection Act requires that archeological resources be identified and that proper permits be obtained prior to excavating any resources. The NPS has conducted the necessary survey work to ensure that no archeological resources will be impacted by this project. The NPS has initiated consultation with the State Historic Preservation Office in North Carolina regarding the proposed project.

**Comprehensive Environmental Response, Compensation and Liability Act**

The Comprehensive Environmental Response, Compensation and Liability Act established regulations regarding the assessment, remediation, and liability for remediation of hazardous substances that have caused contamination. No areas within the park have been designated as a National Priority List site, nor found to contain any hazardous materials.

**Clean Air Act**

The Clean Air Act establishes regulations regarding disclosure, control, and abatement of air pollutants. The alteration in use of the areas associated with the project is not expected to have a significant impact on regional air quality. Therefore, the alternatives are compatible with the requirements of the Clean Air Act.

**Toxic Substances Control Act**

The Toxic Substances Control Act establishes regulations regarding proper management and disposal of polychlorinated biphenyls (PCBs) and other hazardous chemicals. The proposed project will not involve the use of any hazardous materials.

### **Resource Conservation and Recovery Act**

The Resource Conservation and Recovery Act establishes regulations regarding the generation, transportation, storage, treatment, and disposal of hazardous waste. No hazardous materials are to be used as part of the proposed project.

### **Americans with Disabilities Act of 1990**

The Americans with Disabilities Act (ADA) establishes federal guidelines that define requirements for disabled access to Parking facilities, pathways, and buildings. The ADA is not applicable because development planned would not impact accessibility.

### **Wilderness Act**

The Wilderness Act, signed into law in 1964, created the National Wilderness Preservation System and recognized wilderness as “an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain.” The Wilderness Act prohibits permanent roads and commercial enterprises, except commercial services that may provide for recreational or other purposes of the Wilderness Act. Wilderness areas generally do not allow motorized equipment, motor vehicles, mechanical transport, temporary roads, permanent structures or installations (with exceptions in Alaska). Wilderness areas are to be primarily affected by the forces of nature, though the Wilderness Act does acknowledge the need to provide for human health and safety, protect private property, control insect infestations, and fight fires within the area. The project area associated with White Oak Road is not within a proposed Wilderness area.

## **1.5 Draft Impact Topics Considered, But Dismissed From Further Analysis**

The following is a discussion of several impact topics that have been analyzed and considered with regard to potential effects resulting from either of the alternative actions. The relationships of these topics are summarized as part of the impacts analysis based on a factual, objective review of potential effects that alternatives might have, or the lack thereof. The impact topics are discussed below, but will not be carried forward into the detailed analysis in this EA. There will not be any changes to these impact topics resulting from the proposed widening of White Oak Road.

- ***Air Resources*** - The Clean Air Act of 1973 (as amended) and associated NPS policies require the NPS to protect air quality in Parks and other holdings. The intent of this effect topic is to assess actions that may improve and protect air quality for human health and ecosystem benefits, or that may have an adverse effect. In general, this topic analyzes far reaching and local influences on air quality, many of which are out of the control of the NPS. For example, GRSM is downwind from large urban and industrial areas in states to the north and west, and prevailing winds often carry potential pollutants that are deposited in the area. Acid precipitation is a major influence on stream water quality at the park, and could cause excessive nutrient enrichment in soils, and affect sensitive vegetation. GRSM is designated a Class I area per the Clean Air Act of 1973, which provides the highest level of air-quality protection. The proposed road widening project would not generate any pollution that would be discernable from baseline that would adversely affect human health and environmental resources. An amount of exhaust from automobiles would be expected regardless of which alternative is analyzed.

- ***Climate Change*** - The project would not likely result in substantial increases in vehicle traffic in the park from the current condition and thus no real increase in greenhouse gas emissions. The amount of increase or decrease of emissions is small compared to the park's baseline emissions and to local or state emissions, thus the project's contribution to climate change was dismissed from further analysis.
- ***Geology*** - GRSM is host to a variety of outstanding geological features with unusual intrinsic value. Many of these geological features are regularly viewed and studied by a wide range of visitors, educators, and scientists and are considered a valuable natural resource. The proposed project will not alter geologic features and resources at the park. Therefore, geological resources will not be carried forward into the detailed analysis portion of this EA.
- ***Floodplains*** - Floodplain or flood-prone areas include those low-lying areas that are flooded during 100 year storm events. These areas are generally mapped by the Federal Emergency Management Agency and those maps are made available to the general public. Local and some state governments implement the federal floodplain protection regulations, which at a minimum regulate construction of dwellings and other structures in the floodplain. The proposed project would not involve the filling or alterations of floodplain areas, and would not require the construction of any structures. Earthwork and construction activities that could adversely affect flood-prone areas are not part of the proposed facility improvements. Given that the alternatives proposed will not affect floodplain values, this topic will not be carried forward into the detailed analysis.
- ***Wild and Scenic Rivers*** - Wild and scenic rivers are designated by the federal mandate and are provided with advance protection at the federal, state, and local levels. Wild and scenic rivers have not been designated within GRSM boundaries; therefore, this topic will not be carried forward into the detailed analysis.
- ***Transportation*** - GRSM does not have a public transportation system that operates and the project would not require or include any transportation services. The proposed alternatives will not affect transportation other than improve basic vehicle flow and safety, and as such transportation will not be carried forward into the detailed analysis.
- ***Indian Trust Resources*** - Indian trust resources include those resources not on Native American owned property, but rather on DOI administered lands that are held in trust on behalf of Native American tribes. Secretarial Order 3175 requires that any anticipated impacts to Native American trust resources from a proposed project or action by DOI agencies be explicitly addressed in environmental documents. The federal Indian Trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to Native American and Alaska Native tribes. GRSM as a public holding is not considered a Native American trust resource and there are not any such designated resources at the park. The proposed project and the

proposed alternatives do not conflict with any American Indian interests. Therefore, this topic will not be carried forward into the detailed analysis.

- ***Prime or Unique Farmland*** - The Natural Resource Conservation Service (1993) defines prime farmland as soil that produces general crops such as common foods, forage, fiber, and oil seed. Unique farmland is defined as soil that produces specialty crops such as fruits, vegetables, and nuts. The soil types in the GRSM area provide limited support for prime farmland and unique farmland based on these definitions. Areas of agricultural use on GRSM do not exist and as such the proposed alternatives do not involve alterations to any land-use or soil. Therefore, prime or unique farmland will not be carried forward as an impact topic.
- ***Lightscape*** - In accordance with *NPS Management Policies, 2006* (2006), the NPS strives to preserve natural ambient lightscapes, which are resources and values that exist in the absence of human caused light. The proposed project would not be expected to result in any changes to the existing lightscape conditions. Therefore, this topic will not be carried forward into the detailed analysis.
- ***Soundscape Management*** - In accordance with *NPS Management Policies, 2006* (2006) and *NPS Director's Order 47: Sound Preservation and Noise Management* (2001c), an important part of the NPS mission is preservation of natural soundscapes associated with Parks. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in Park units, together with the physical capacity for transmitting natural sounds. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among NPS units, as well as potentially throughout each Park unit, are generally greater in developed areas and less in undeveloped areas. The proposed project would create additional noise for a short period of time during construction with no long- term effects. Therefore, this topic will not be carried forward into the detailed analysis.
- ***Environmental Justice*** – According to the United States Environmental Protection Agency (USEPA), environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the adverse environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. Presidential Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. Any actions related to the proposed project would not be expected to have health or environmental effects on minorities or low-income populations or communities

as defined in the USEPA Environmental Justice Guidance (USEPA 1998). Therefore, this topic will not be carried forward into the detailed analysis.

- ***Non-Federal Lands Within GRSM - Private Residential and Commercial Properties and Municipal and State lands*** - Of the 522,000 acres within the park boundaries, the NPS owns all lands, with the exception of some 322 acres that constitute remnant private in-holdings. The proposed project is not seen as an issue that affects landownership or development and is not near any in-holdings. The proposed alternatives will not hinder or alter in an adverse or beneficial way public and private access to any areas in the park; therefore, this topic will not be advanced into the detailed analysis.

## **2.0 ALTERNATIVES**

There are two alternatives for the White Oak Road Widening Project, a "No Action Alternative" and a "Build Alternative." The alternatives were developed to resolve issues associated with:

- Narrow, unpaved road unsuitable for increasing traffic load
- Access to residential areas by school buses and emergency vehicles
- Construction of additional road corridor across NPS property
- Protection of NPS resources

### **2.1 Alternative A (No action alternative)**

Under Alternative A, there would be no changes made to the road corridor. The No Action alternative is presented as a requirement of the National Environmental Policy Act, (NEPA) and is the baseline condition with which proposed activities are compared.

The relatively narrow, unpaved road would continue to serve an increasing traffic load. School buses, emergency and other larger vehicles would potentially have difficulty in accessing the developed area. The existing roadway surface from edge of shoulder to edge of shoulder is 18 ft wide. NCDOT would continue to implement selected repairs to White Oak Road as funding allows. The road and related features along the road would continue to deteriorate. Repair and/or maintenance to the road and related features would be conducted where there is specific need for critical and emergency repairs. Frequent patching of potholes in the unpaved surfaces of the road and repairs would continue as needed to maintain them.



**Figure 1. Alternative A: No Action, Existing Road Corridor**

## **2.2 Alternative B (Build Alternative)** *(Environmentally Preferred and Preferred Alternative)*

Under the Build Alternative, the road corridor (existing maintained right-of-way of 0.816 acres) would be expanded by approximately 0.705 acres. An additional 0.242 acres are requested as a construction easement. The proposed new dimension would be 28 ft. The proposed new maintained ROW would be 50 ft. wide, thus with the proposed temporary construction easement would result in an increase of 0.947 acres of disturbance from the existing ROW. The purpose of the temporary construction easement is to allow NCDOT to construct cut and fill slopes that may extend past the proposed 50 foot ROW. The road would be paved, which would include excavation to adjust grade and match the existing pavement and the placement of aggregate base with asphalt. The construction areas beyond the ROW would not be needed by NCDOT to maintain the road after construction and would be replanted with native vegetation using the Park approved seed mixture.



## 2.3 Alternatives Considered But Rejected

An alternative that would involve constructing the road to meet NPS road standards by straightening curves was evaluated. The proposed horizontal alignment includes four curves that do not meet the minimum center-line radius requirement for a 20 mph design speed. The proposed alternative would have made design exceptions for these curves. The curves have center-line radii of 50 to 90 feet. The objective of the NC DOT project is to widen and pave White Oak Road primarily along the existing alignment, while minimizing construction impacts. In order to meet the minimum design requirement, the curve radii would have to be flattened. This would require significant changes to the alignment, resulting in extensive cuts and fills. This alternative was considered, but rejected because of excessive environmental damage.

A second alternative was considered that involved paving the existing footprint of the road without widening. Widening was considered important to accommodate higher volume of traffic, including larger vehicles such as ambulances, fire trucks and school buses. This alternative was considered but rejected since increased local development requires this accommodation. Thus the alternative of paving without widening would not meet the project's purpose and need.

## 2.4 Environmentally Preferred Alternative

Alternative B has been identified as the Environmentally Preferred Alternative since it is the alternative that will promote the environmental policy expressed in the National Environmental Policy Act (NEPA) (Sec. 101 (b)). The specific objectives of NEPA that will be met by Alternative B include the following:

- *Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.*
  - Alternative A will result in some erosion and degradation of soils which may run off to adjacent streams and thus does not have net benefits to the natural or cultural resource protection in the long-term.
  - Alternative B will provide minor long-term benefits to natural resources and will not have any long-term adverse impacts on the environment.
- *Ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.*
  - Alternative A will not allow for emergency access and will continue to provide a less safe environment for oversized vehicle passage. The unpaved road will be less esthetically pleasing, creating dust and irregular road surfaces for driving.
  - Alternative B will result in better access to the project area and improve safety through improvements in emergency vehicle and oversized vehicle access. The paved road will be an esthetic improvement as compared to the unpaved road.
- *Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.*
  - Alternative A will continue to pose a safety concern for passage of emergency and oversized vehicles. Under Alternative A the road would continue to degrade without pavement.

- Alternative B will widen, straighten and pave White Oak Rd. This alternative will eliminate existing safety problems and provide safer use of and access to the area.
- *Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.*
  - Alternative A could result in some erosion associated with the unpaved surface and thus a slight potential for loss of archeological resources or discharge of sediment to adjacent streams from runoff.
  - Alternative B will preserve historic, cultural, and natural aspects of our heritage. It will improve access to rural residences near the Park boundary.
- *Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities;*
  - Alternative A will not improve the road condition or the safety associated with access to the area.
  - Alternative B will enhance the safety and the road condition of White Oak Road thus improving standards of living.
- *Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.*
  - Alternative A will not have any adverse impact on renewable resources or depletable resources.
  - Alternative B will not have any adverse impact on renewable resources or depletable resources.

## 2.5 Mitigations

Several elements of the proposed road widening relative to natural resource protection, cultural resource protection and public safety require additional safeguards in order to protect park resources and the adjacent community. The Park will work with NC DOT to minimize the construction footprint and consider re-design the section where road cut would destroy populations of beaked hazelnut and chinquapin. Mitigations for issues identified within this document are represented in the table below.

Issue	Mitigation
<b>Natural Resources</b>	
<b>Disturbance and Exotic Species</b>	Revegetation must be accomplished using NPS approved seed and erosion control materials, No straw or hay may be used on site and any fill material, topsoil or mulch must be approved by NPS. Consider re-design to avoid population of beaked hazelnut and chinquapin
<b>Minimize disturbance</b>	Work with NCDOT in design standards to minimize footprint of disturbance

<b>Threatened and Endangered Species/Water Resource Protection</b>	Implement erosion control to protect stream and wetland
<b>Threatened and Endangered Species</b>	Indiana Bats: When removing large trees (greater than 6 inches DBH) that have characteristics for Indiana Bat summer roosts (i.e., dead trees with exfoliating bark, tree cavities, and crevices) then follow the decision process: 1). Remove potential roost trees only between Oct 15 and April 15 or 2). Have a qualified individual observe for bats existing in the trees for 20 minutes before and after sunset. If bats are observed, use mist netting to determine species or resurvey tree at a later date.
<b>Water Resources</b>	Use Best Management Practices including the installation of proper erosion and silt management to protect riparian zone of Rocky Creek and associated wetland
<b>Cultural Resources</b>	
<b>Archeological Resources</b>	Consult with SHPO. Provide on-site archeological monitoring during construction.
<b>Cultural Landscapes</b>	Consult with SHPO in accordance with Section 106.
<b>Other Issues</b>	
<b>Public Health and Safety</b>	Design criteria to meet basic safety needs while balancing NR impacts
<b>Transportation Corridors</b>	Post Warning Signs/implement DOT standard traffic control
<b>Visitor Use</b>	Post current construction information on websites as available
<b>Park Operations</b>	Post current construction information on websites as available
<b>Park Neighbors</b>	Post current construction information on websites as available To inform park neighbors; use park public affairs to disseminate information

Of specific note was a request by NPS to NC DOT to provide design details that would both minimize disturbance and impacts to NPS lands through a thorough assessment of minimum footprint and design standards. While NC DOT provided a basic design to NPS, it did not address mechanisms to minimize the construction footprint at this time. Those design details will be necessary to meet the intent of this environmental review, as the information provided would represent worst case. While this document reviews impacts associated with the NC DOT preferred construction plan and worst case environmental consequences, NPS will work with NC DOT to refine the final design and permit language to further minimize construction related impacts. In other words, NC DOT requested a 50 ft right-of-way but has not fully documented the need for that width as necessary to meet their primary project objectives, thus NPS will work with NC DOT to develop a right-of-way permit of potentially lesser size, which will likely further reduce impacts.

## 2.6 Summary of Impacts / Alternatives

The following table (Table 1) summarizes and compares the likely results of implementing the No Action Alternative and the Preferred Alternative as they relate to the environment.

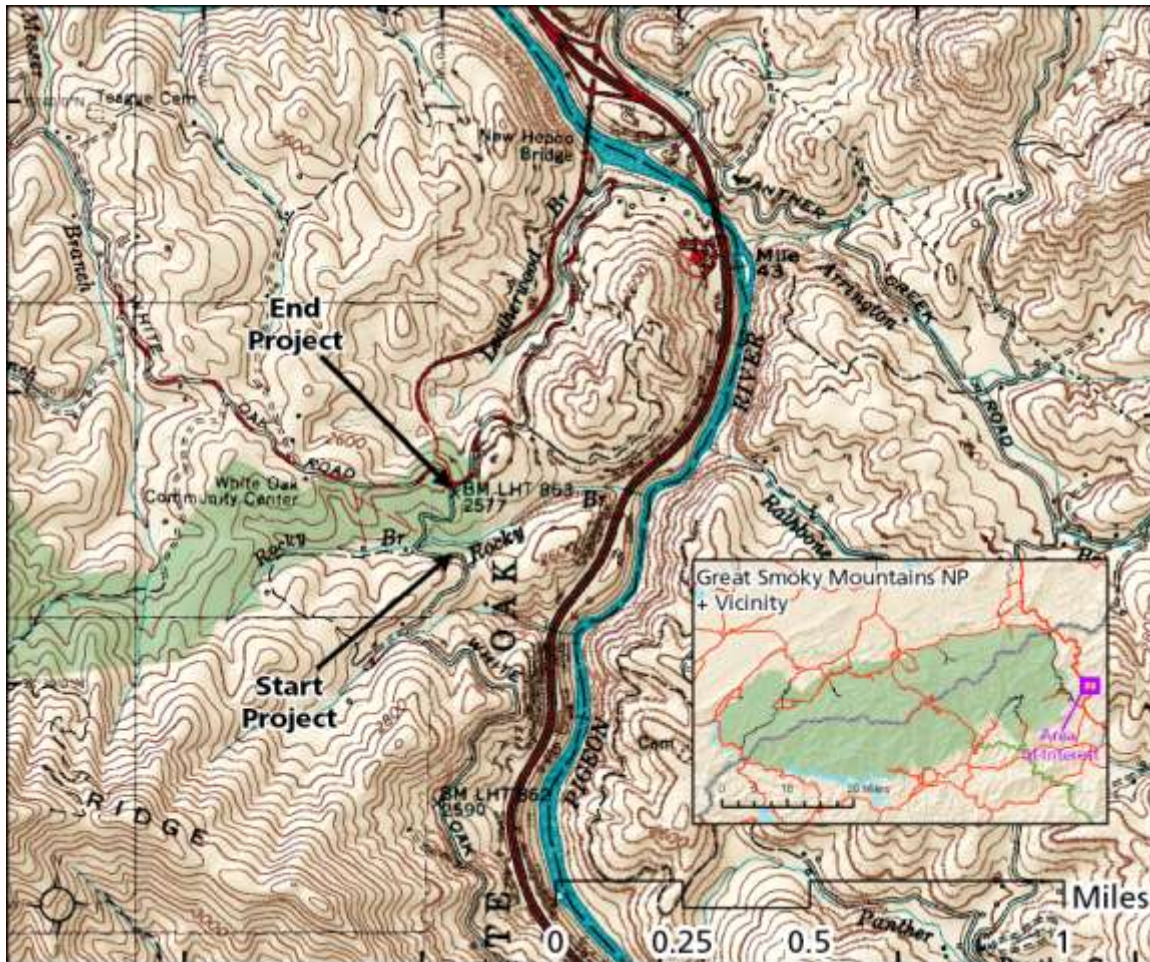
**Table 1. Summary of Environmental Consequences**

<b>Impact Topic</b>	<b>Alternative A - No Action Alternative</b>	<b>Alternative B - Build Action</b>
<b>Natural Resources</b> (Botanical, vegetation, wetlands, open fields, Vascular plants, Bryophytes, Lichens.)	<u>Short-term:</u> No effect. <u>Long-term:</u> No effect <u>Cumulative:</u> Moderate	<u>Short-term:</u> minor adverse impact <u>Long-term:</u> Negligible adverse impact <u>Cumulative:</u> Moderate
<b>Soils</b>	<u>Short-term:</u> Negligible adverse impact <u>Long-term:</u> Minor adverse impact <u>Cumulative:</u> No effect	<u>Short-term:</u> Negligible adverse impact <u>Long-term:</u> Negligible beneficial impact <u>Cumulative:</u> No effect
<b>Cultural Resources</b>	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect
<b>Public Use Health and Safety</b>	<u>Short-term:</u> Beneficial impact <u>Long-term:</u> Minor adverse impact <u>Cumulative:</u> No effect	<u>Short-term:</u> Negligible adverse impact <u>Long-term:</u> Beneficial impact <u>Cumulative:</u> No effect
<b>Park Management and Operations</b>	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect	<u>Short-term:</u> No effect <u>Long-term:</u> No effect <u>Cumulative:</u> No effect

## 3.0 AFFECTED ENVIRONMENT

### 3.1 Project area Description

The project area is located in Haywood County, NC, west of Interstate 40 Exit 15 (Fines Creek) and east of GRSM's Cataloochee Valley. The small rural community of White Oak consists of scattered small farms, a church, and newer residential developments. The county seat, Waynesville, is about 18 miles to the southeast.



**Figure 3. General Vicinity Site Map**

## 3.2 Physical Environment

### 3.2.1 Topography and Soils

**Topography.** The proposed project is located about 1 mile from the Pigeon River, on GRSM's southeastern boundary. According to U.S. Geological Survey (USGS) topographical maps, topography within GRSM dramatically ranges from steep mountainous terrain with significant slope relief (18 to 28 degrees) to rolling hills to alluvial floodplain valleys (Figure 3). The highest mountains rise more than 5,000 feet above the valley floors. The highest elevation in the park is atop Clingman's Dome, at 6,643 feet above mean sea level (msl), while the lowest elevations are encountered along the Little Tennessee River, averaging 1,000 feet msl. Interspersed between the valleys, ridges, and mountains are hollows, gaps, and coves. Rocky Branch, a small tributary to the Pigeon River, crosses through the project area and the elevation where the creek crosses White Oak Road is approximately 1200 ft. elevation. Chestnut Flat Ridge, a few miles southwest of the project area, is just over 4000 ft.

White Oak is located within the 7.5' series USGS topographical maps for the Cove Creek Gap and Fines Creek, North Carolina, Quadrangles.

**Soils.** Underlying rocks of the project area consist of pre-Cambrian gneiss, schist, quartzite, sandstone and metamorphosed shales. No pyritic Anakeesta schist has been mapped in the vicinity. Thunderhead Sandstone, which is common in the area, intergrades with Anakeesta and so either may be present at the project site.

These soils are not defined as Prime Farmland (per executive order) and are generally well drained. These soils have moderately rapid permeability, low shrink-swell capacity, and low potential for run-off. Other data is available on-line at the Soils Data Mart of USDA-NRCS (<http://soilsdatamart.nrcs.usda.gov>).

### 3.2.2 Water Resources

**Surface Water.** Rocky Branch, a small (approximately 20 feet wide) tributary to the nearby Pigeon River, originates nearby on the slopes of Chestnut Flats Ridge and flows under White Oak Road within the project area approximately twenty five yards distant from the proposed work zone.

**Wetlands.** The National Wetland Inventory (NWI) identifies both riverine and palustrine wetland habitats in the Smokies. Riverine systems include all wetlands and deepwater habitats contained in natural or artificial channels, and periodically or continuously containing flowing water or forming a connecting link between two bodies of standing water. The upper perennial system is characterized by a high gradient and fast water velocity. "Unconsolidated bottom" includes all wetlands and deep-water habitats having at least a 25 percent cover of particles smaller than stones (less than 6 cm to 7 cm) and a vegetative cover less than 30 percent, although finer or coarser sediments may be intermixed. "Permanently flooded" indicates that water covers the land surface throughout the year in all years. The NWI characterizes these wetland areas as palustrine temporarily, seasonal, or semi-permanently flooded.

A small riverine (stream-side) wetland associated with Rocky Branch is about 25 yards below the road ROW. A culvert beneath White Oak Road carries intermittent surface water from above the road down into Rocky Branch.

### 3.3 Natural Resources

**Aquatic Resources.** One small creek, Rocky Branch, is present in the project area.

Aquatic macro-invertebrates found in the park include insects, annelids, crustaceans, mollusks, and arachnids. Aquatic macro-invertebrate species are numerous in the Park and as diverse as the number and types of streams, creeks, and rivers offering habitats.

The species of aquatic insects most commonly found in the creeks include: mayflies; stoneflies; caddisflies; dragonflies (order Odonata); mosquitoes, flies, midges, crane flies (order Diptera); fishflies and alderflies (order Megaloptera); and whirligig beetles (order Coleoptera, family

Gyrinidae). Water striders (order Hemiptera, family Gerridae) are usually found on the surface of slow moving waters, ponds, and marshes. Stream quality indicator species likely to be found include: mayfly species *Baetis tricaudatus*, *Epeorus rubidus*, and *Stenonema pudicum*; stonefly species *Acroneuria abnormis*, *Leuctra* spp., and *Tallaperla* spp.; and caddisfly species *Brachycentrus spinae*, *Neophylax consimilis*, and *Rhyacophila fuscula*.

The stream does not likely support fish species based on field observations conducted over several site visits.

**Terrestrial Resources.** A survey to assess terrestrial resources was conducted April 16, 2009, by Park Inventory and Monitoring Coordinator Keith Langdon and Park Botanist Janet Rock. Reconnaissance was conducted of the boundaries and obvious resource attributes including wetlands, rare plants and natural communities. Vegetation within the White Oak Road corridor grows mostly on steep slopes, with virtually no alluvial flood plains, and few mesic-to-wet slopes. Common plant communities in nearby forested areas are deciduous oak and hickory forests. Much of the land below the roadway corridor is abandoned pasture, while all above the roadway is in forest. The following species are common in the immediate project corridor: white pine, tulip poplar, black locust, red maple, sourwood, black birch, black cherry, spicebush, alternate-leaved dogwood, flowering dogwood, spicebush, red oak, black walnut, devil's walkingstick, common hydrangea, pale leaved blueberry, and Virginia clematis. Swamp aster, jewelweed, and fox grape are found in moist areas.

Observations of rare plants included:

- A population of approximately 50 Southern Nodding Trilliums (*Trillium rugelii*) located at the toe of the existing roadway fill slope, between the roadway and Rocky Branch and across the road and downstream from the residence (from about survey stake 72+50 to 73+50). This species is on a "Watch List" as "rare and poorly known", designating species with inadequate information about distribution and rarity in North Carolina. The Park has documented several other populations of this species on both sides of the Park; it is listed by TN as endangered.
- Beaked hazelnut (*Corylus cornuta*) and Allegheny chinquapin (*Castanea pumila*) were both found intermixed along the upper lip of the cut-bank for the existing roadway on drier banks. The high bank ~100 meters down from the intersection with the Fine's Creek road, and continually around the sharp curve is the area of greatest concentration for these species. Hazelnut was only known at a single location in 1982 (White, 1982) at High Rocks in the Swain county section of the park. It has since been found at the southern terminus of Welch Ridge. The White Oak Road site is the third location known in the Park for this shrub, which is common enough that it is not listed at any level.
- The chinquapin is a sister species of the American chestnut (*Castanea dentata*), and is also susceptible to the Chinese chestnut blight (*Cryptonectria parasitica*). However, it responds well to wildland fire. Once considered "rare or possibly extirpated" from the Park by White (1982), it has since been found at three different sites though always in small numbers. This shrub was found above White Oak Road around most of the sharp curve near the intersection with Fines Creek Road from about survey stake 81+00 to 83+00. This is the largest and best developed stand of this species known in the Park, with specimens to 4 meters tall, many infected the with chestnut blight.

Observations of exotic plants included:

- The entire pasture area adjacent to the work sites as well as woods edges are infested with multiflora rose (*Rosa multiflora*); however many of the shrubs appear to be significantly infested with Rose rosette disease, an insect vectored plant virus believed native to parts of North America. Some of the shrubs are completely dead.
- Oriental bittersweet (*Celastrus orbiculata*) occurs along the upper side of the roadway from about survey stake 80+00 to 81+00.
- Japanese grass (*Microstegium vimineum*) and Japanese honeysuckle (*Lonicera japonica*) are also frequent.

Wildlife resources in the project area include common large mammals (e.g., black bear [*Ursus americanus*] and white-tailed deer [*Odocoileus virginianus*]), medium-sized mammals (e.g., eastern cottontail rabbit [*Sylvilagus floridanus*], striped skunk [*Mephitis mephitis*], opossum [*Didelphis virginiana*], woodchuck or groundhog [*Marmota monax*], red fox [*Vulpes vulva*], gray fox [*Urocyon cinereoargenteus*], and raccoon [*Procyon lotor*]), and several species of small mammals (e.g., various species of shrews, mice, and voles). Elk are also present.

GRSM is a premier place for birds. From the high, exposed peaks, to the warmer, sheltered lowlands, some 240 species of birds have been found in the park. Sixty species are year-round residents. Nearly 120 species of birds breed in the park, including 52 species from the neotropics. Many other species use the park as an important stopover and foraging area during their semiannual migration. More birds will be heard than seen in the park's dense, tall forests, where more than 100 species of birds a day can be found during peak migration (late April and early May). A partial list for the White Oak project areas includes: Yellow-breasted chat, Indigo bunting, Hooded warbler, Field sparrow, Wood thrush, Carolina wren.

Three major groups of reptiles are found in the park: turtles, lizards, and snakes. None were observed in the White Oak project area.

Climatic and geologic factors have combined to spur the development of 31 salamander species in five families, making this one of the most diverse areas on earth for this order. In fact, lungless salamanders have undergone an extraordinary level of evolutionary diversification in the park, accounting for 24 of the salamander species in the park and making it the center of diversity for the family. In total, 31 salamanders and 13 frogs are known to inhabit GRSM, though no observations were made at the White Oak site.

Insects make up the bulk of the non-microbial diversity in GRSM. Estimates of the number and type of species found in the park are, at best, educated guesses, and only through further research will the total number that inhabit the Smokies be approached. Many insects are beneficial to the environment and the park's ecosystem, performing key tasks, such as plant pollination and organic decomposition and recycling, and serving as food for birds, fish, and other animals. Without insects performing these services, hundreds of plants and other animals would disappear from the park. Some insects, however, are agricultural pests or serve as disease vectors that can affect plants and other animals, including humans. Some of

these insect pests are responsible for the decline in eastern hemlock and Fraser fir within the park and in the surrounding areas.

**Threatened and Endangered Species.** Under Section 7 of the Endangered Species Act (ESA) of 1973, as amended, any action likely to adversely affect a species classified as federally protected is subject to review by the USFWS. Under North Carolina law, any action likely to adversely affect a species classified as protected by the state of NC is subject to review by the state. Few species of plants and animals are listed by the state of NC or the USFWS as endangered or threatened. The number of species that are listed as being of management concern by the NPS and state of NC is much larger.

The only listed species potentially within this project would be the Indiana bat (*Myotis sodalis*). The Indiana bat is a federal- and state-listed endangered species that utilizes cave habitats for winter hibernation. Indiana bats mate in the fall, but the female Indiana bats do not actually become pregnant until spring. Indiana bats migrate to tree roost sites in the spring, where they form maternity colonies consisting of 20 to 100 members. The bats roost beneath the shedding bark of live or dead trees, bearing only one young per female. The female may relocate their young to warmer spots on the tree where the tree is exposed to sunlight, as temperature affects the length of time required for the young to mature (Britzke et al. 2003 and 2006; USFWS 2004; Humphrey et al. 1977). According to Dr. Susan Loeb, project leader of the USDA Forest Service Southern Research Station (SRS) Threatened and Endangered Species Unit, it is common for Indiana bats to move from roost to roost, carrying their young with them (Loeb 2002; USFWS 2004). The site does not appear to be habitat for this animal, though no surveys for this federally listed bat species were undertaken. Appropriate mitigations to avoid impacts as recommended by U.S. Fish and Wildlife Service would be undertaken by restricting tree cutting during the bats' breeding season to avoid any potential disturbance (see Mitigations, Section 2.5).

### 3.4 Cultural Resources

A legacy of human occupation and use of the land that now comprises GRSM is evident in cultural resources managed by the Park. These include:

- Over 500 known archeological sites with more sites discovered each year. These sites have been identified in virtually all of the park's biotic zones and geomorphic settings. A current registry of known sites is maintained in the park service wide Archeological Sites Management Systems (ASMIS).
- Over 197 historic structures are listed on the park service wide List of Classified Structures (LCS). These include historic buildings and early park infrastructure including roads, bridges, and visitor centers.
- 42 landscapes and component landscapes are currently listed on the park service wide Cultural Landscape Inventory (CLI). These include both those that have been certified as cultural landscapes as well as some that have been identified for further study as cultural landscapes.
- Ethnographic resources include over the over 150 known cemeteries located within the park's boundaries as well as other sites that hold particular significance to traditionally associated peoples.

- Cultural museum objects have been described as the manifestations and records of behavior and ideas that span the breath of human experience. The museum collection of the Park includes over 500,000 cultural objects and archival records.

Archeological evidence of people utilizing the abundant natural resources of the Smokies begins 12,000 years ago and continues until the formation of the GRSM in 1934. In the Smokies, archeological resources consist of prehistoric and aboriginal sites that represent several southeastern cultural periods, as well as historic sites related to mountain culture and the Park development period.

In 1926, President Calvin Coolidge signed into legislation a bill authorizing the establishment of GRSM. By 1934, the acquisition of private lands had reached the acreage threshold denoted in the enabling legislation and the park was officially born. By 1933, park management staff was in place and planning for needed visitor infrastructure was underway.

Beginning in the late 1950's and continuing into 1960's, plans were developed for a new entrance to the Cataloochee portion of the park. Construction of Interstate 40 (I-40), connecting Tennessee and North Carolina, was well underway and a connector route between Cataloochee and I-40 would require lands for the right-of-way. Acquisition of these lands was undertaken by the North Carolina State Highway Commission (NCSHC). They were then deeded to the NPS on February 5, 1970 (Haywood County Deed Record Book 239/ Page 398).

The acquired lands for the right-of-way would tie into the existing road system (State Route 1338) near Hepco, North Carolina and would pass through a portion of a small mountain community known as White Oak. White Oak was erected as township in 1895. It was originally part of Jonathans Creek Township, where some of the first grants of land in Haywood County were entered. By 1900, White Oak had a population of 345, but was in decline as the 1930 census indicates a population of 300 (Medford 1968:56). The development that was anticipated with the coming of I-40 did not seem to alter the White Oak community and the area retains its rural roots. Hepco, North Carolina is so named for the Haywood Electric Power Company which once operated a water-driven power plant there.

The general project area was once used for the extraction of clay and for the manufacture of brick. A brick kiln once sat on the parcel of land through which the project road runs. Several site visits were made to the project site by park cultural resource staff (September 23, 2009; October 6, 2009; and November 3, 2009) to evaluate potential cultural resources. No historic structures, cultural landscapes, ethnographic resources or cultural museum objects (other than archeological artifacts collected as part of site survey work) are known to be associated with the White Oak Flats Road project area.

No prehistoric archeological resources have been documented in this area and it is likely given the topography and previous road maintenance and construction activities that no intact prehistoric archeological resources are present.

One historic period site is known to occur. Park acquisition maps, oral history interviews, and documentary evidence indicate the property was owned and inhabited between 1919 and the 1960s. Local residents familiar with the history of this site indicate that it served as a store and

homestead. Previous to this, the site housed a kiln oven to bake bricks. At least eight buildings were present historically, however only two buildings stood near the road corridor. Both areas were visually surveyed by park archeology staff. The location of one was apparent in a small area that had been leveled in past, however no evidence of a structure or structural remains was present. The site is at least 20 feet off of the present road shoulder and no impacts from road widening are anticipated at this location. The second structure site was difficult to locate as dense vegetative growth obscured any ability to survey the area. Slopes appear in excess of 25degrees and the structure would have been on stone footers or another type of foundation to level the structure. It is possible that remnants of this structure are present. A remnant stone staircase and stone mailbox associated with the overall site were also observed adjacent to the road.

### **3.5 Public Use, Health and Safety**

The broad management goals of the Park are to preserve the Park's diverse resources while providing for public benefit and enjoyment. GRSM is the most heavily visited park of the national park system with nearly 10 million visitors, annually (9,167,044 for 2004). Most visitors to the region travel in private automobiles. In addition to roads providing access to and within the park, numerous foot and horse trails provide access to the park's backcountry. The principal use of GRSM is recreational. Activities include; viewing wildlife and scenery from motor vehicles, hiking, biking, camping, horseback riding, kayaking, and fishing. Park visitation rates vary seasonally, peaking between June and October. Visitation tends to be heavier during weekends and holidays, and backcountry use is high during college breaks. The park's natural features are the main attraction for visitors, with most activities restricted to driving through the park, or picnicking, rather than backcountry camping and hiking (USDI NPS 1982). The park's backcountry contains approximately 850 miles of trail with 102 campsites and 18 shelters. Camper nights numbered 276,468 at the 10 developed campgrounds (GRSM 2005). The park had 73,786 camper nights at backcountry campsites in 2004 (GRSM 2005). In 2004, GRSM had an annual budget of \$15.4 million (GRSM 2005).

The GRSM is noted for its outstanding scenery, including:

- Forest resources
- Mountain streams
- Wildlife
- Flowering plants
- Historical resources
- Scenic roads
- Scenic trails

White Oak Road is not a primary access route to the Park and is used locally to gain access to residential areas and farms.

Safety: White Oak Road within the Park boundary is a two lane unpaved narrow road that serves as an access point to residential areas. The area has grown in recent years with large tracts of new development. The NC DOT had concerns about the entire length of White Road and its level of safety for oversized vehicles including school buses and emergency vehicles and has widened all portions of the road outside the Park boundary. The 0.9 mile Park segment remains

unpaved and narrow with several serpentine curves some of which are blind curves. The current configuration likely poses a safety concern due to the inconsistent pavement and width applications along the road and need to slow to address concerns on unpaved surfaces compared to paved areas.

### **3.6 Park Management and Operations**

GRSM has 312 onsite Park staff that provides the full scope of functions and activities to accomplish management objectives in law enforcement, emergency services, public health and safety, science, resource protection and management, visitor services, interpretation and education, community services, utilities, and housing. Park Rangers respond to accidents and enforce NPS regulations under 36 CFR. The Division of Resource Management and Science conducts inventories, manages exotic species and protects native wildlife and vegetation.

Limited management and operations occur in the White Oak area as the federal land ownership is small; however, the area is patrolled and resource issues are still evaluated and protected in the area.

## **4.0 ENVIRONMENTAL CONSEQUENCES**

NEPA requires that a range of reasonable alternatives and the unavoidable environmental consequences associated with implementation of the alternatives be revealed prior to undertaking proposed federal actions. This chapter provides a summary of the analysis of the environmental consequences associated with implementation of the No Action Alternative and the proposed action alternative, widening of White Oak Road.

The goals of NPS management for all resources are achieved through consideration of the potential resource impacts associated with each alternative and identification of an alternative that balances unavoidable impacts with the goals and objectives for the project. Resource impacts associated with each alternative differ greatly in their context, intensity and duration and this balanced approach considers the merit of all resources equally.

Impact topics are the resources of concern that could be affected by the range of alternatives. Specific impact topics were developed to ensure that alternatives were compared on the basis of the most relevant topics. The following impact topics were evaluated: natural resources, cultural resources, surrounding community, public use and experience, and park management and operations. Other impacts categories were dismissed due to the nature of the project and the lack of direct relevance to the project yet are briefly discussed in Section 1.3.

### **4.1 Determination of Impairment to Park Resources**

*Management Policies 2006* (NPS 2006) require analysis of potential effects to determine whether or not actions would impair national park resources or values. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, actions that would adversely affect park resources and values. These laws give the NPS the management

discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement (enforceable by the federal courts) that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise.

The impairment that is prohibited by the Organic Act and the General Authorities Act is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Impairment may result from NPS activities in managing the park, from visitor activities, or from activities undertaken by concessionaires, contractors, and others operating in the park. An impact on any park resource or value may constitute impairment. However, an impact would be most likely to constitute impairment if it affected a resource or value whose conservation was:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents.

The intent of this proposed project is to widen and pave White Oak Road to address safety concerns.

## **4.2 Environmental Impact Definitions**

***Type of Impact:*** Impacts are categorized in two different and contrasting types: adverse and beneficial. Adverse impacts are considered contrary to the goals, objectives, management policies, and practices of the NPS and the public interest or welfare. These impacts are of a kind likely to be damaging, harmful, or unfavorable to one or more of the various impact topics. Beneficial impacts are believed to promote favorable conditions for the impact topics.

***Levels of Intensity:*** Levels of intensity refers to severity of the impact, whether it is negligible or major, or somewhere in between. The gradient of this grading system can be general or very detailed, but ultimately the assumptions and subjectivity of the system affect its sensitivity. A simple and subjective rating system is used in this Draft EA, which includes a rating scale of “no effect, negligible, minor, moderate, and major effects.” The authors of this Draft EA based the rating system score on studies completed, data and information obtained from scientific and administrative sources, discussions with relevant individuals, public comments, common sense, and professional opinion. For example, consideration was given as to whether or not an action affects any natural resource parameters. The definition of “no effect” would be the same for each of the general impact topics, natural resources, cultural resources etc. No effect would mean that no measurable effects could be recorded or surmised. Each of these gradient levels is further defined below.

- For natural resource impacts including wildlife and vegetation:
  - *Negligible:* Impacts would be barely detectable, measurable, or observable.
  - *Minor:* Adverse Impacts would be detectable, but not expected to have an overall effect on the natural community. Impacts generally affect less than one-half acre of vegetation or would not be expected to influence the population of any wildlife species, or may influence a small number of individuals of a species.
  - *Moderate:* Impacts would be clearly detectable, but could have short-term appreciable effects on the local ecology. Impacts may affect up to one-acre of vegetation, but would not threaten the continued existence of any natural community. Impacts would have short-term effects. *Major:* Long-term or permanent, highly noticeable effects on the population of a species, natural community, community ecology, or natural processes. Impacts may affect over one-acre of vegetation or may affect the continued existence of any natural community or species.
- For cultural resource impacts including cultural heritage:
  - *Negligible:* Impact to the resource is barely perceptible and not measurable and is confined to a very small local area.
  - *Minor:* Adverse impact – Impact(s) would not affect a character-defining pattern, behaviors of individuals, and features of the local heritage.
  - *Moderate:* Adverse impacts would alter a character-defining pattern or features of the local heritage, but would not diminish the integrity of the local heritage.
  - *Major:* Adverse impacts would alter a character-defining pattern or features of the local heritage and diminishing the integrity of the local heritage.
- For public use and recreation - public use, health and safety impacts:
  - *Negligible:* Impacts would be barely detectable, hence visitors would not be aware of any effects or changes to the concession operation. There would be no noticeable change in public use and safety or in any indicators of visitor satisfaction or behavior. Public health and safety would not be affected; effects on employee and visitor health or safety would not be appreciable or measurable
  - *Minor:* For adverse impacts, visitors would be aware of effects, but this would not appreciably limit critical characteristics of a majority of the visitors. Effects on employee or visitor health would be detectable; however, they would not produce and appreciable change in public health or safety.
  - *Moderate:* Adverse impacts would result in a change of a few critical characteristics of the desired public experience and/or the number of participants engaging in an activity would decrease. Public satisfaction would begin to decline as a result of the effect. The effects on public health and safety would be readily apparent, and would result in noticeable effects. Changes in rates or severity of injury or illness could be measured.
  - *Major:* Multiple critical characteristics of the desired public experience would change and/or the number of participants engaging in an activity would be greatly reduced or increased. The public would be aware of the effects associated with implementing the alternative and public satisfaction would markedly decline or increase. The effects on public health and safety would be readily apparent and would result in substantial, noticeable effects on staff and/or visitor and safety, and could lead to mortality. Changes in rates or severity of injury or illness could be measured.

- For Park Management and Operations – consistency with park and NPS legislative mandates, goals, plans, policies, guidelines, and mandates:
  - *Negligible:* Impacts would be barely detectable, any alterations or conflicts with legislative mandates, goals, policies, etc. could be alleviated through a brief administrative process.
  - *Minor:* A waiver or other administrative process for two management policies would be required or the NPS would deviate from two policies or guidelines.
  - *Moderate:* A waiver from more than two management policies would be required or the NPS would deviate from one or two policies and guidelines. The NPS would deviate from any legislative mandate.
  - *Major:* Adverse impacts include deviation from NPS policies and/or guidelines would require extensive administrative change.

***Duration:*** Duration describes how long an impact would be expected to last. In this EA, impacts are described as either being short-term or long-term. Short-term is an impact that would last no more than two years. Long-term would be an impact that would last for more than two years.

***Context:*** Context is the setting within which an impact is analyzed, such as the affected region or locality and the affected interests. In this EA, the intensity of impacts is evaluated within a local context, primarily considering effects on the park area itself. The intensity of effects on cumulative impacts is evaluated in a regional context, and considers effects further in time and effects from other projects.

***Direct and Indirect Impacts:*** Direct impacts include effects on the resource actually caused by the proposed action, generally at the immediate site of the action and at the time of the action. Direct impacts can extend into the future and are often permanent, but can be temporary. A direct effect is an effect that is caused by an action and occurs at the same time and place. An example of a direct impact would be the filling of a portion of a stream, which immediately causes habitat loss at that location.

Indirect impacts generally occur as a result of a “side-effect” of a direct impact, but occur later in time or further in distance than the action. For example, an indirect impact could result from silt flowing downstream, creating turbid conditions, and adversely affecting water quality.

***Cumulative Impacts:*** The CEQ regulations, which implement the NEPA (42 USC 4321 *et seq.*), require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all alternatives and focus on a regional area well beyond the park boundary.

Cumulative impacts were determined by combining the impacts of each alternative with other past, present, and reasonably foreseeable future actions within the park and the vicinity. These impacts are assessed on a regional basis. These projects include development within the region,

long-term population trends, cultural and social changes. While there are a series of road improvements ongoing in the Park during this proposed work period, none are within any reasonable distance from the project area and would not likely result in any cumulative impacts. In addition, this project area is extremely remote to the main access areas of the Park and would not normally be associated with visitation of traditionally utilized Park areas.

### 4.3 Cultural Resource Analysis

Impacts to cultural resources are described in terms of type, context, duration, and intensity, as described above, which is consistent with the regulations of the Council on Environmental Quality (1978) that implement the National Environmental Policy Act. These impact analyses also are intended to comply with the requirements of Section 106 of the National Historic Preservation Act (NHPA). In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act (36 *Code of Federal Regulations* Part 800, Protection of Historic Properties), impacts on cultural resources were identified and evaluated by:

- Determining the area of potential effects;
- Identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places;
- Applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and
- Considering ways to avoid, minimize, or mitigate adverse effects.

Under the Advisory Council's regulations, a determination of either adverse effect or no adverse effect must also be made for affected cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register. For example, this could include diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternative that would occur later in time, be farther removed in distance, or be cumulative (36 *Code of Federal Regulations* Part 800.5, Assessment of Adverse Effects). A determination of no adverse effect means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

The Council on Environmental Quality (1978) regulations and *Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2001a) call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, such as reducing the intensity of an impact from major to moderate or minor. Any resulting reduction in intensity of impact because of mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse. A Section 106 summary is included in the impact analysis for cultural resources. The summary is intended to meet the requirements of Section 106 of the

National Historic Preservation Act and is an assessment of the effect of implementing the alternatives on cultural resources, based on the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations. It should also be noted that not all cultural resources of concern in the park are listed resources but are still evaluated as part of this assessment.

#### **4.4 Alternative A (No Action Alternative)**

##### **4.4.1 Natural Resources**

**Impacts:** In the short-term, the No Action alternative would have no apparent effect on the condition of Park vegetation, fish, wildlife or soils and in particular there would be no affect on the natural resources associated with the proposed project site. There are no federally listed threatened or endangered species that would be impacted from this alternative. The No Action alternative would not have any apparent effect on the condition of Park water resources other than negligible (short term) to minor (long term) effects associated with soil erosion of the unpaved sections of road.

**Cumulative Impacts:** Cumulative impacts potentially include local development, which is occurring regardless of the unimproved road section. There would be no other cumulative impacts under this alternative.

**Conclusion:** Alternative A would result in no adverse long-term impact on natural resources.

**Impairment:** Alternative A would result in no impairment to Park natural resources. The road would remain within its existing disturbance footprint. No new disturbance would occur. No resources or values whose conservation was necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or identified as a goal in the park's general management plan or other relevant NPS planning documents are to be impacted as a result of this action.

##### **4.4.2 Cultural Resources**

**Impacts:** As the No Action alternative, this alternative would involve no ground disturbance and there would be no adverse or beneficial impacts upon archeological resources. There are no known historic structures, cultural landscapes, ethnographic resources or museum collections associated with the project area and there would be no project related adverse or beneficial impacts to these resources.

**Cumulative Impacts:** There would be no cumulative impacts under this alternative.

**Conclusion:** Alternative A would result in a no adverse or beneficial long or short-term impacts on cultural resources.

Impairment: Alternative A would result in no impairment to Park cultural resources. The road would remain within its existing disturbance footprint. No new disturbance would occur. No resources or values whose conservation was necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or identified as a goal in the park's general management plan or other relevant NPS planning documents are to be impacted as a result of this action.

#### **4.4.3 Public Use, Health and Safety**

Impacts: Alternative A would have short-term beneficial impacts since there would be no impacts on public health and safety area during a construction period. The road remaining unpaved would likely continue to deteriorate and road conditions could result in increased safety impacts which would display minor adverse impacts in the long-term.

There would be minor long-term adverse impacts on public health and safety since the narrow, unpaved road is potentially hazardous and limits access by emergency vehicles.

Cumulative Impacts: The continuation of public health and safety due to the substandard, narrow and unpaved road segment would have a minor cumulative adverse impact on the overall problem of inadequate public safety in the White Oak area.

Conclusion: Alternative A would result in negligible short-term beneficial impacts and minor long-term adverse impacts on public health and safety.

#### **4.4.4 Park Management and Operations**

Impacts: Under alternative A, no impact is anticipated to Park Management and Operations

Cumulative Impacts: Alternative A would result in no cumulative impacts.

Conclusion: Alternative A would result in no impacts on Park management and operations.

### **4.5 ALTERNATIVE B (Build Alternative) (*Environmentally Preferred and Preferred Alternative*)**

#### **4.5.1 Natural Resources**

Impacts: Construction-related land disturbance would expose soils to possible erosion, but due to the small area of disturbance, any impacts would be minor and short-term. Best Management Practices (i.e. biodegradable erosion control materials, silt fencing, see section 2.5 Mitigations) will be employed during construction to avoid soil erosion or potential for runoff. Under the Build Alternative, the road corridor (maintained ROW) would be expanded by approximately 0.876 acres. An additional 0.298 acres are requested as a construction easement. Increased disturbance may increase occurrence of exotic plant species. No noticeable impacts on wildlife

species would occur because construction would occur in an area that has already been impacted by a road and does not serve as wildlife habitat.

No federally listed threatened or endangered species or federally designated critical habitats have been identified in the project area. The trees to be removed may be potential summer habitat for the endangered Indiana bat; therefore they would be removed during specified dates (late November or early December-March) to mitigate any potential impacts to the Indiana bat. The proposed action would not affect a listed species or designated critical habitat.

The project area includes one small stream, Rocky Branch. Any ground disturbance will be mitigated for erosion using best management practices; however, there may be long-term negligible impacts associated with building the road thus reducing further erosion of soils. Native plants will be used in revegetating the area and the disturbed area will be monitored for exotics and treated in accordance with the Park's integrated pest management plan.

NPS will work with NC DOT on specific design criteria to minimize the actual footprint of impacts during design and engineering. So while acreages above are estimated as the area of disturbance, NPS anticipates a reduction of the construction footprint during this more detailed planning phase.

**Cumulative Impacts:** Cumulative impacts will be no different from Alternative A, in that development is already occurring in the local area.

**Conclusion:** Alternative B would result in negligible short-term adverse impacts due to soil disturbance during construction but ultimately would result in negligible beneficial effects in the long-term associated with stabilization soils after paving. These impacts may include damage to soil microbes and structure as well as to soil-dwelling invertebrates, vertebrates and plants. There would be negligible long-term adverse impacts due to loss of mature trees and shrubs and potential increase in invasive exotic species.

**Impairment:** Alternative B would result in no impairment to Park resources. The majority of the road would remain within its existing disturbance footprint with a small increase in acreage disturbed area beyond that footprint. A thorough assessment of resources at risk and site assessments were conducted associated with the new disturbance and negligible impacts would be associated with that additional disturbance. No resources or values whose conservation was necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or identified as a goal in the park's general management plan or other relevant NPS planning documents are to be impacted as a result of this action.

#### **4.5.2 Cultural Resources**

**Impacts:** There are no known historic structures, cultural landscapes, ethnographic resources or museum collections associated with the project area and there would be no project related adverse or beneficial impacts to these resource types. Alternative B would result in negligible short-term impacts to archeological resources. Inadvertent discoveries during the construction

phase will be handled through the use of archeological monitoring particularly in those areas where structures were known to have stood. Remnants of the stone steps and mailbox are avoidable and are to be protected during construction to mitigate potential impacts.

Cumulative Impacts: There would be no cumulative impacts under this alternative.

Conclusion: Alternative B would have no adverse or beneficial impacts on cultural resources.

Impairment: Alternative B would result in no impairment to Park resources. The majority of the road would remain within its existing disturbance footprint with a small increase in acreage disturbed area beyond that footprint. A thorough assessment of resources at risk and site assessments were conducted associated with the new disturbance and negligible impacts would be associated with that additional disturbance. No resources or values whose conservation was necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or identified as a goal in the park's general management plan or other relevant NPS planning documents are to be impacted as a result of this action.

Section 106 Statement on the Preferred Alternative: After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR Part 800.5, Assessment of Adverse Effects), the NPS concludes that implementation of the road widening project in Alternative B would not have an adverse effect on any historic property, i.e., any area or object included in, or eligible for inclusion in, the National Register of Historic Places. As required by Section 106 of the NHPA, the NPS has initiated informal consultation with the North Carolina State Historic Preservation Officer regarding this project. Comments on the project from the State Historic Preservation Officer and other interested parties will be addressed in the final compliance documents. Should the need arise, additional mitigation measures will be developed in consultation with the State Historic Preservation Officer.

#### **4.5.3 Public Use, Health and Safety**

Impacts: Alternative B would have negligible short-term adverse impacts due to minor hazards of construction.

There would be minor long-term beneficial impacts on public health and safety as a result of the proposed road widening. These beneficial effects are associated with the improvements to the road condition through paving, the slight widening of the road to permit safe passage of oversized vehicles and the ability to allow for free and ready passage of emergency vehicles.

Cumulative Impacts: There would be no cumulative impacts under this alternative.

Conclusion: Alternative B would result in negligible short-term adverse impacts and minor long-term beneficial impacts on public health and safety.

#### **4.5.4 Park Management and Operations**

Impacts: Under alternative B, there will be no adverse impact on the ability of the NPS to carry out other essential management activities. The project would not alter interpretive programs or impact law enforcement operations. NPS policy specifically states that right-of-way permits should be considerate of minimizing impacts and design considerations must be incorporated that address this stipulation.

Cumulative Impacts: Alternative B would result in no cumulative impacts.

Conclusion: Alternative B will result in no impacts.

### **5.0 CONSULTATION AND COORDINATION**

To date the NPS has consulted or coordinated with the following groups and individuals on this assessment:

Advisory Council on Historic Preservation  
Eastern Band of Cherokee Indians Tribal Historic Preservation Office  
North Carolina State Historic Preservation Office

Public notice regarding the availability of this EA will be distributed to local news media and other interested parties. A public comment period is scheduled to run from to February 16, 2010 to March 19, 2010. Written comments can be submitted to:

Superintendent  
Great Smoky Mountains National Park  
107 Park Headquarters Road  
Gatlinburg, Tennessee 37738

Public comments will be reviewed and responded to on an individual basis. Public comment will be summarized in the decision document. This EA will be on public review for 30 days.

Comments may also be submitted on the NPS' Planning web site at

<http://parkplanning.nps.gov/grsm>.

### **6.0 LIST OF PREPARERS**

The following organizations and people contributed to writing this assessment:

Dale A. Ditmanson, Superintendent  
Kevin Fitzgerald, Deputy Superintendent  
Nancy Finley, Chief, Resource Management and Science  
Kristine Johnson, Supervisory Forester

Dianne Flaugh, Cultural Resources Specialist  
Eric Kreusch, Archeologist and Cultural Resource Coordinator  
Jami Hammond, NEPA Coordinator, SER

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**Appendix 1: Supporting Documentation on Consultations/Coordination**

**Advisory council on Historic Preservation  
General Agreement between GRSM and NC DOT**